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PATENT & TRADEMARK OFFICE

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Yasushi SANO et al.	Group Art Unit: 1793
Application No.: 10/551,035	Examiner: J. YANG
Filed: September 27, 2005	Docket No.: 136097

For: ELECTROLYTIC COPPER FOIL WITH LOW ROUGHNESS SURFACE AND PROCESS FOR PRODUCING THE SAME

DECLARATION UNDER 37 C.F.R. §1.132

I, Yasushi Sano, a citizen of Japan, hereby declare and state:

1. I have a Masters of Science degree in Solid State Chemistry, which was conferred upon me by Okayama University of Science in Okayama-City, Japan in 1991.

2. I have been employed by Fukuda Kinzoku Hakufun Kogyo since 1991 and I have had a total of 18 years of work and research experience in Electrodeposited Copper Foil.

3. My publications include the following works in this field:

a) "Percolative Behavior of Ag-phase Clusters in Superconducting Bi-Pb-Sr-Ca-Cu-O Ceramics," Physica B-194-196, p. 1949 (1994);

b) "Effect of Ag-doping on the Intergranular Properties of the Superconducting Bi-(Pb)-Sr-Ca-Cu-O System," Physica B-194-196, p. 1949 (1994);

c) "Synthesis of New Ternary Tunnel Chalcogenides by Ion Exchange Reaction and Deintercalation of the Ternary and Chromium Selenides," Mater. Res. Bull. 28, p. 501 (1993);

d) "Precipitation of Impurity Phases and its Effect on the Intergrain Conducting Properties of Ag-doped Bi-(Pb)-Sr-Ca-Cu-O," Supercond. Sci, Technol. 8, p. 329 (1995);

e) "Electrical Properties and Phase Transitions in Superconducting Quasi-One-Dimensional Chalcogenides $In_XNb_3X_4$(X=S, Se and Te)," J. Solid State Chem. 103, p. 504 (1993);

f) "Phase Transitions in New Quasi-One-Dimensional Sulfides $TlCu_7S_4$ and KCu_7S_4," Solid State Commun. 78, p. 913 (1991);

g) "Nuclear Spin-Lattice Relaxation of ^{205}Tl in $TlMo_6Se_8$," Physica C-185-189, p. 2733 (1991);

h) "Ca-Substitution Effects in $Bi_{2+x}Sr_{2-x}Cu_{1+x/4}O_z$ Solid Solution," Japan Society of Powder Metallurgy 39, p. 362 (1992);

i) "Chemical Mechanical Stability of the High-Tc Phase in the Bi-Sr-Ca-Cu-O System (III) - Morphology and Reaction of Crushed Powder," Japan Society of Powder and Metallurgy;

j) U.S. Patent No. 6,231,742; and

k) U.S. Patent Application Publication No. 10/555,356.

4. I am a named inventor in the above-captioned patent application.

5. I have a professional relationship with the assignee of the above-identified patent application. In the course of that professional relationship, I received compensation directly from the assignee for my work relating to electrodeposited copper foils. I am being compensated for my work in connection with this Declaration.

6. I and/or those under my direct supervision and control have conducted the following tests:

Electrodeposited copper foils were prepared in accordance with Examples 1 to 4 in U.S. Patent No. 5,834,140 to Wolski et al ("Wolski"). See Wolski, col. 6, line 50 - col. 8, line 9. The electric current density, liquid temperature, degree of mirror gloss of roughness surface, roughness surface and gloss surface of the electrodeposited copper foils were measured in the same manner as the examples and comparative examples in the specification of U.S. Patent Application No. 10/551,035. See specification, page 16, line 13 - page 18, line 3. The results from the test are shown in Table 1 below.

TABLE 1

Ex. No.	MPS mg/L	HEC mg/L	Zeratin mg/L	CI mg/L	Electric Current Density A/dm^2	Liquid Temperature °C	Degree of mirror gloss of roughness surface Gs (85°)	Roughness surface (μm)	Gloss Surface (μm)
1	15	10	0	35	50	58	95	2.46	2.05
2	0.5	0	3	35	50	58	73	2.45	2.05
3	0.8	3	6	35	50	58	85	2.02	2.05
4	1.0	5	5	35	50	58	50	3.83	2.05

The obtained degree of mirror gloss of roughness Gs for all of Examples 1 to 4 were below 100. As can be seen from the above examples, Example 1 has the highest degree of mirror gloss of roughness surface. This example does not use zeratin in its electrolyte solution. It is quite common for electrodeposited copper manufacturers to use zeratin in their electrolyte solutions to provide electrodes on jagged portions. However, the specification recites the use of polyethylene amines as the additive agent, and the matte surface is produced as smooth and made jagged by a labeling function without the use of zeratin. Accordingly, a degree of mirror gloss of roughness surface Gs of 100 or more is achieved.

I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine and/or imprisonment under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing therefrom.

Date: 2009, November. 26

Yasushi Sano

Yasushi SANO